

# PATENT COOPERATION TREATY

**PCT**

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C. 20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 28 August 2000 (28.08.00)	
<b>International application No.</b> PCT/IL99/00667	<b>Applicant's or agent's file reference</b> 36155
<b>International filing date (day/month/year)</b> 07 December 1999 (07.12.99)	<b>Priority date (day/month/year)</b> 07 December 1998 (07.12.98)
<b>Applicant</b> SLOVIN, Zvi	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
07 July 2000 (07.07.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland	<b>Authorized officer</b> Frédéric Rotsaert
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04Q 7/36</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/35222</b> <b>(43) International Publication Date:</b> 15 June 2000 (15.06.00)
<b>(21) International Application Number:</b> PCT/IL99/00667 <b>(22) International Filing Date:</b> 7 December 1999 (07.12.99) <b>(30) Priority Data:</b> 127436 7 December 1998 (07.12.98) IL <b>(71) Applicant (for all designated States except US):</b> MARCONI COMMUNICATIONS ISRAEL LTD. [IL/IL]; 1 Hamelacha Street, Industrial Zone, 71293 Lod (IL). <b>(72) Inventor; and</b> <b>(75) Inventor/Applicant (for US only):</b> SLOVIN, Zvi [IL/IL]; 41/10 Hanasi Harishon Street, 76303 Rehovot (IL). <b>(74) Agent:</b> COLB, Sanford, T.; Sanford T. Colb & Co., P.O. Box 2273, 76122 Rehovot (IL).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>
<b>(54) Title:</b> APPARATUS AND METHODS FOR CHANNEL ALLOCATION		
<b>(57) Abstract</b>		
<p>This invention discloses a method for utilization of a first plurality of channels by a second plurality of transmitters, the method includes the steps of defining a third plurality of transmitter subsets such that at least one of the second plurality of transmitters is included in each transmitter subset; assigning at least one channel from among the first plurality of channels to each transmitter subset, to be shared among the transmitters in that transmitter subset, such that less than all of the first plurality of channels are assigned to the third plurality of transmitter subsets, thereby defining a reservoir of channels which have not been assigned to any transmitter subset, and sharing the channels in the reservoir of channels between all of the second plurality of transmitters. A system for utilization of a first plurality of channels by a second plurality of transmitters is also disclosed.</p>		

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# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>36155</b>	<b>FOR FURTHER ACTION</b>		see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. <b>PCT/IL 99/ 00667</b>	International filing date (day/month/year) <b>07/12/1999</b>	(Earliest) Priority Date (day/month/year) <b>07/12/1998</b>	
Applicant  <b>MARCONI COMMUNICATIONS ISRAEL LTD. et al.</b>			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

## INTERNATIONAL SEARCH REPORT

International Application No

IL 99/00667

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 H04Q7/36

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 876 074 A (NORTHERN TELECOM LTD.) 4 November 1998 (1998-11-04) abstract; figures 10-12 column 5, line 37 - line 57 ---	1,3,12
A	WO 95 16332 A (BRITISH TELECOMMUNICATIONS PLC.) 15 June 1995 (1995-06-15) abstract; figures 3-5 page 9, line 4 -page 10, line 26 ---	1
A	WO 97 32440 A (TELEFONAKTIEBOLAGET LM ERICSSON) 4 September 1997 (1997-09-04) abstract; claim 1 ---	1,2
A	US 5 844 894 A (DENT) 1 December 1998 (1998-12-01) abstract; figures 6B-8B column 9, line 54 -column 10, line 18 --- -/-	4-7

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

7 March 2000

Date of mailing of the international search report

14/03/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Danielidis, S

## INTERNATIONAL SEARCH REPORT

International Application No.

IL 99/00667

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DUQUE-ANTON ET AL.: "Channel Assignment for cellular Radio Using Simulated Annealing" IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, vol. 42, no. 1, February 1993 (1993-02), pages 14-21, XP000363395 USA cited in the application the whole document ----	1
A	KATZELA ET AL.: "Channel Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive Survey" IEEE PERSONAL COMMUNICATIONS, vol. 3, no. 3, 1 June 1996 (1996-06-01), pages 10-31, XP000593925 USA the whole document -----	1

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

IL 99/00667

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 876074	A	04-11-1998	BR 9801538 A	18-05-1999
			CA 2236515 A	02-11-1998
WO 9516332	A	15-06-1995	AU 686698 B	12-02-1998
			AU 1116195 A	27-06-1995
			CA 2176832 A	15-06-1995
			CN 1136878 A	27-11-1996
			EP 0733297 A	25-09-1996
			JP 2878456 B	05-04-1999
			SG 47764 A	17-04-1998
WO 9732440	A	04-09-1997	AU 2108597 A	16-09-1997
US 5844894	A	01-12-1998	AU 1971597 A	16-09-1997
			WO 9732441 A	04-09-1997

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference BO 43769	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IL99/00667	International filing date (day/month/year) 07/12/1999	Priority date (day/month/year) 07/12/1998
International Patent Classification (IPC) or national classification and IPC H04Q7/36		
Applicant MARCONI COMMUNICATIONS ISRAEL LTD. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 8 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand  07/07/2000	Date of completion of this report  15.03.2001
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Möll, H-P  Telephone No. +49 89 2399 8243 



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL99/00667

## I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

### Description, pages:

1-62 as originally filed

### Claims, No.:

1-12 as originally filed

### Drawings, sheets:

1/30-30/30 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL99/00667

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Yes:	Claims	1-12
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-12
Industrial applicability (IA)	Yes:	Claims	1-12
	No:	Claims	

2. Citations and explanations  
**see separate sheet**

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/IL99/00667

**Cited Documents**

1. Reference is made to the following document (**D1**) in this International Preliminary Examination Report:

**D1: "Channel Assignment Schemes for Cellular Mobile Telecommunication Systems: A Comprehensive Survey",**

I. Katzela et al,

IEEE Personal Communications, vol. 3, no. 3, 01.06.1996, pages 10-31

**Re Item V**

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Article 33(2) PCT, Novelty:

- 1.1 **Claims 1 and 12:**

None of the cited prior art references discloses all of the features of the subject-matter of independent **Claims 1 and 12** which therefore meet the requirements of Article 33(2) PCT regarding **novelty**.

- 1.2 **Claims 2 and 4-11:**

As a consequence, **Claims 2 and 4-11**, as being directly or indirectly dependent on **Claim 1**, also meet the requirements of Article 33 (2) PCT regarding **novelty**.

- 1.3 **Claim 3:**

The subject-matter of independent **Claim 3** essentially corresponds to the features of independent **Claim 1** and does therefore also meet the requirements of Article 33(2) PCT regarding **novelty**.

2. Article 33(3) PCT, Inventive Step:

- 2.1 **Claims 1 and 12:**

- (a) The document **D1** is regarded as being the closest prior art to the subject-matter of independent method **Claim 1** and corresponding independent system **Claim 12**, and shows a "method/system for utilization of a plurality of [...] channels by a [...] plurality of transmitters" with the following features defined in **Claims 1 and 12**

of the present invention:

- assigning at least one channel from among the first plurality of channels [...], to be shared among the transmitters [...], such that less than all of the first plurality of channels are assigned [...] (**D1**, page 21, left column, "fixed set", see the first eight lines of the paragraph dealing with "HCA" for reference) thereby defining a reservoir of channels which have not been assigned [...]; (**D1**, page 21, left column, "dynamic set", see lines 8/9 of the paragraph dealing with "HCA" for reference) and

- sharing the channels in the reservoir of channels between all of the second plurality of transmitters (**D1**, page 21, left column, "dynamic set", see lines 9-11 of the paragraph dealing with "HCA" for reference).

- (b) The **method** respectively **system** defined in present **Claims 1 and 12** differ from the disclosure of document **D1** only in that **D1** does not explicitly show that a plurality of transmitter subsets is defined, such that at least one of the second plurality of transmitters is included in each transmitter subset.
- (c) Considering the fact, however, that it represents a well-known measure in prior art telecommunications systems to group transmitters (i.e. "cells") in transmitter subsets (i.e. "clusters") to allow **frequency re-use** (or channel re-use) and that the present International Application does not specify the step of defining transmitter subsets with any further **technical features** showing any contribution to the prior art, it follows that the above-mentioned feature of present **Claims 1 and 12** does not add anything of **inventive significance** to the features that are explicitly disclosed in **D1** (see point 2.1(a)) and that therefore the subject-matter of **Claims 1 and 12** does not meet the requirements of Article 33(3) PCT.

## 2.2 Claim 3:

- (a) The subject-matter of independent **Claim 3** essentially corresponds to the features of independent **Claim 1** and does therefore not add any new substantive technical features.

As already outlined under points 2.1(a)-2.1(c) above, document **D1** obviously

discloses selecting channels from a fixed or a dynamic set depending on their availability (**D1**, page 21, left column, "fixed and dynamic sets", see lines 1-11 of the paragraph dealing with "HCA" for reference).

Independent **Claim 3** does therefore also not meet the requirements of Article 33(3) PCT.

**2.3 Claims 2 and 4-11:**

- (a) Dependent **Claims 2 and 4-11** do not contain any features which, in combination with the subject-matter of the Claims to which they are appended, meet the requirements of the PCT in respect of **inventive step** (Article 33(3) PCT), as the additional features introduced by said dependent claims refer only to minor implementing details which are disclosed or directly derivable from the cited prior art references or fall within the general knowledge or technical competence of a person skilled in the art.

**Claim 2:** only concerns a minor implementing detail, as it is considered well-known in the field of cellular frequency planning to apply a certain "frequency re-use distance" when assigning the same frequency to different cells

**Claims 4-7:** **D1**, page 10, right column, see lines 1-11 of the paragraph dealing with "Channel Allocation Schemes" for reference

**Claims 8-11:** only concern minor implementing details

**Re Item VII**

**Certain defects in the international application**

**1. Reference Signs:**

According to the requirements of Rule 11.13(I) reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference signs "400, 420" in Fig.21 (see description on page 17), "510, 520" in Fig.22 (see description on page 17), "600, 620, 630" in Fig.23 (see description on page 17), "800, 810, 820, 840, 850, 860, 880" in Fig.25 (see description on page 17) and "900, 910, 920, 930, 940" (see description on page 17/18). All said reference signs should have been added to the description

on pages 17/18.

2. Channels "E" and "F" should have been removed from the "**Local reservoir of Subset III**" in Fig.17a according to the description on page 15.
3. The graphs shown in Figs. 5 and 6 that are intended to show the relationships between **subsets I-VI** are incomplete compared to the description and to Figs. 7a-7f. The nodes shown in Figs. 5 and 6 should therefore have been filled with the corresponding **subset numbers I-VI**.
4. To meet the requirements of Rule 5.1.(a) (ii) PCT, the relevant background art disclosed in the document **D1** cited in the International Search Report should have been mentioned in the description and these documents should have been identified therein.
5. The independent claims should have been cast in the proper two-part form in accordance with Rule 6.3(b) PCT with those features known in combination from the nearest prior art document **D1** being placed in a *preamble* (Rule 6.3(b)(i) PCT) and with the remaining features being included in a *characterising part* (Rule 6.3(b)(ii) PCT).
6. In the introductory part of the description, the statements indicating the technical problem to be solved should have been revised with reference to the relevant prior art document **D1** cited above (Rule 5.1 (a) (iii) PCT).
7. The "**incorporated by reference**" statement on page 1 just preceding the paragraph starting with the "Summary of the invention" should have been deleted, since the application should be self-contained (PCT International Preliminary Examination Guidelines, Chapter II, 4.17).

#### **Re Item VIII**

#### **Certain observations on the international application**

1. The various definitions of the invention given in the **three independent Claims**, i.e. the two independent **Claims 1 and 3** in the method category and the system

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/IL99/00667

(apparatus) **Claim 12** corresponding to **Claim 1**, which are of similar or at least overlapping scope, are such that the Claims as a whole are not **clear** and **concise**, contrary to the requirements of Article 6 PCT.

Indeed, the subject matter represented in these different independent Claims overlaps to such an extent that they could have easily been formulated as a single independent claim in each of the system (apparatus) and method category comprising all the features that are essential to the definition of the invention and dependent claims as appropriate (see Rule 6.1(a) PCT and the PCT International Preliminary Examination Guidelines, Chapter III, 5.1).

2. Dependent **Claim 11** does not meet the requirements regarding **clarity** following from Article 6 PCT for the following reasons:

The term "dropout transmitter" and the step of "releasing a dropout transmitter" as used in **Claim 11** are totally **unclear** and **undefined**. Even the description does not appear to provide any support. The subject-matter of **Claim 11** thus leaves the reader in doubt as to the scope of protection that the applicant desires.